

Anthrax

What is anthrax?

Anthrax is an acute infectious disease caused by the spore-forming bacterium *Bacillus anthracis*. Anthrax most commonly occurs in wild and domestic lower vertebrates (cattle, sheep, goats, camels, antelopes, and other plant-eating animals), but it can also occur in humans when they are exposed to infected animals or tissue from infected animals. Anthrax has also been weaponized, as in the October 2001 contaminated mail attacks in the United States.

Why has anthrax become an issue?

It has become an issue because it is a potential agent for use in biological warfare or by terrorists.

How common is anthrax and who can get it?

Anthrax can be found globally. It is more common in agricultural regions of developing countries or countries without veterinary public health programs. Certain regions of the world (South and Central America, Southern and Eastern Europe, Asia, Africa, the Caribbean, and the Middle East) report more anthrax in animals than others. When anthrax affects humans, it is usually due to occupational exposure to infected animals or their products. Workers who are exposed to dead animals and animal products from other countries where anthrax is more common may become infected with *B. anthracis* (industrial anthrax). Unfortunately, it can also be used as a bioweapon, as evidenced by the events in the United States of October 2001, when contaminated mail was sent to Tom Daschle of the U.S. Senate and others.

How is anthrax transmitted?

Anthrax infection can occur in three forms: cutaneous (skin), inhalation, and gastrointestinal. The most common route during a bioterrorist attack is inhalation. *B. anthracis* spores can live in the soil

for many years, and humans can become infected with anthrax by handling products from infected animals or by inhaling anthrax spores from contaminated animal products. Anthrax can also be acquired by eating undercooked meat from infected animals. It is rare to find infected animals in the United States. As a weapon, anthrax can be made into a powder and released through such means as mail, packages, or through the air, e.g., dropped from an airplane.

What are the symptoms of anthrax?

Symptoms of the disease vary depending on how it was contracted, but they usually occur within 7 days.

Cutaneous: Most (about 95%) anthrax infections occur when the bacterium enters a cut or abrasion on the skin, such as when handling contaminated wool, hides, leather, or hair products (especially goat hair) of infected animals. Skin infection begins as a raised itchy bump that resembles an insect bite but within 1-2 days develops into a vesicle and then a painless ulcer, usually 1-3 cm in diameter, with a characteristic black necrotic (dying) area in the center. Lymph glands in the adjacent area may swell. About 20% of untreated cases of cutaneous anthrax will result in death. Deaths are rare with appropriate antimicrobial therapy.

Inhalation: Initial symptoms may resemble a common cold. After several days, the symptoms may progress to severe breathing problems and shock. Inhalation anthrax is usually fatal after symptoms appear.

Intestinal: The intestinal form of anthrax may follow the consumption of contaminated meat and is characterized by an acute inflammation of the intestinal tract. Initial signs of nausea, loss of appetite, vomiting, and fever are followed by abdominal pain, vomiting of blood, and severe diarrhea. Intestinal anthrax results in death in 25-60% of cases.

How is anthrax diagnosed?

As in determining any infection, a physician orders laboratory tests and makes a diagnosis based on the findings. Anthrax is diagnosed by isolating *B. anthracis* from the blood, skin lesions, or respiratory secretions, or by measuring specific antibodies in the blood of persons with suspected cases.

Is there a treatment for anthrax?

Doctors should begin antibiotic treatment as soon as a diagnosis of anthrax is suspected.

Can anthrax be spread from person to person?

Direct person-to-person spread of anthrax is extremely unlikely to occur. Communicability is not a concern in managing or visiting with patients with inhalation anthrax. Therefore, there is no need to immunize or treat contacts of persons with anthrax, such as household contacts, friends, or co-workers, unless they were exposed to the same source of infection.

How can I prevent anthrax exposure from cross-contaminated mail?

There are no scientifically proven recommendations for preventing exposure. However, there are some common-sense steps people can take:

- * Do not open suspicious mail. This could include items with inappropriate or unusual labeling, excessive postage, threatening language, no return address, mail that has a powdery feel to it or oily stains, discoloration, or odor.

- * Do not shake or empty the contents of any suspicious package or envelope.

- * Do not carry the package or envelope, show it to others, or allow others to examine it.

- * Put the package or envelope down and do not sniff, touch, taste or look closely at it or at any contents that may have spilled.

- * Alert others in the area about the suspicious package.

- * Wash hands with soap and water to prevent spreading infectious material to face or skin. Seek additional instructions for exposed or potentially exposed persons.

- * If at work, notify a supervisor, a security officer, or a law enforcement official. If at home, contact the local law enforcement agency.

- * If possible, create a list of persons who were in the room or area when this suspicious letter or

package was recognized and list of persons who have handled it. Give this list to both the NH Division of Public Health Services, Bureau of Communicable Disease Control authorities and law enforcement officials.

Is there a way to prevent infection from other sources?

In countries where anthrax is common and vaccination levels of animal herds are low, humans should avoid contact with livestock and animal products and avoid cooking meat that has not been properly slaughtered and cooked. An anthrax vaccine also can help to prevent infection. A quickly started treatment after a known exposure to anthrax will help as well to prevent the development of disease.

Does a patient have immunity after recovering from anthrax infection?

We do not have enough data at this time to make this determination. However, it is theoretically possible to gain post-infection immunity.

Is there a vaccination I can get for anthrax?

There is a vaccine, which is used for military personnel and persons who handle potentially infected animal products. However, there are no studies or evidence that the vaccine protects against inhalation anthrax. Vaccination against anthrax is not recommended for the general public in order to prevent the disease. The vaccine is not effective in prevention of the disease after someone has been exposed. Antibiotics are recommended in case of a highly suspicious or confirmed exposure. New Hampshire Department of Health and Human Services' health officials will notify the public if such a measure is ever needed.

For specific concerns about anthrax, call the New Hampshire Department of Health and Human Services, Communicable Disease Control Section at 603-271-4496 or 800-852-3345 x4496. For further information, refer to the Centers for Disease Control and Prevention website at www.cdc.gov or the NH DHHS website at www.dhhs.nh.gov.